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(FILE 'HOME' ENTERED AT 05:51:15 ON 17 DEC 2002)

FILE 'CA' ENTERED AT 05:51:24 ON 17 DEC 2002

L1 6483 S (HYDROXIDE OR OH OR HO OR NAOH OR KOH) (5A) SPECTRUM  
L2 55393 S (HYDROXIDE OR OH OR HO OR NAOH OR KOH) (7A) (DETECT? OR DETERMIN? OR  
ASSAY? OR ANALY? OR ASSESS? OR TEST? OR MEASURE? OR MONITOR? OR  
ESTIMAT? OR EXAMIN? OR SENSE# OR SENSING OR SENSOR OR IDENTIF? OR  
PROBE# OR PROBING OR QUANTITAT? OR QUANTIF?)  
L3 1270 S L1 AND L2  
L4 3856 S L1-2 AND (UV OR ULTRAVIOLET OR ULTRA VIOLET)  
L5 243 S L3 AND L4  
L6 37 S L3 AND (KRAFT OR PULP? OR PAPER OR PAPERMAKING OR CELLULOSE)  
L7 69 S L5 AND (NAOH OR KOH OR SODIUM OR POTASSIUM OR CAUSTIC)  
L8 1391 S (CARBONATE OR CO32 OR BICARBONATE OR NA2CO3 OR K2CO3 OR HCO3 OR  
NAHCO3 OR KHCO3) (5A) SPECTRUM  
L9 25331 S (CARBONATE OR CO32 OR BICARBONATE OR NA2CO3 OR K2CO3 OR HCO3 OR  
NAHCO3 OR KHCO3) (7A) (DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR  
ASSESS? OR TEST? OR MEASURE? OR MONITOR? OR ESTIMAT? OR EXAMIN? OR  
SENSE# OR SENSING OR SENSOR OR IDENTIF? OR PROBE# OR PROBING OR  
QUANTITAT? OR QUANTIF?)  
L10 236 S L8 AND L9  
L11 722 S L8-9 AND (UV OR ULTRAVIOLET OR ULTRA VIOLET)  
L12 23 S L10 AND L11  
L13 4 S L10 AND (KRAFT OR PULP? OR PAPER OR PAPERMAKING OR CELLULOSE)  
L14 127 S L6-7, L12-13  
L15 121 S L14 NOT PY>2000

=> d bib, ab 1-121 l15

L15 ANSWER 12 OF 121 CA COPYRIGHT 2002 ACS  
AN 129:190620 CA  
TI In situ analysis of ash deposits from black liquor combustion  
AU Bernath, Peter; Sinquefield, Scott A.; Baxter, Larry L.; Sclipa, Gian;  
Rohlfing, Celeste M.; Barfield, Michael  
CS Combustion Research Facility, Sandia National Laboratories, Livermore, CA,  
94551-0969, USA  
SO Vibrational Spectroscopy (1998), 16(2), 95-103  
AB Aerosols formed during combustion of black liquor cause a significant fire-  
side fouling problem in **pulp** mill recovery boilers (black liquor is a  
recycled byproduct formed during the **pulping** of wood in the **paper**-making  
industry). The ash deposits reduce heat transfer effectiveness, plug gas  
passages, and contribute to corrosion. Both vapors and condensation  
aerosols lead to the formation of such deposits. The high ash content of  
the fuel and the low dew point of the condensate salts lead to a high  
aerosol and vapor concn. in most boilers. In situ measurements of the  
chem. compn. of these deposits is an important step in gaining a  
fundamental understanding of the deposition process. IR emission  
spectroscopy is used to characterize the compn. of thin film deposits  
resulting from the combustion of black liquor and the deposition of  
submicron aerosols and vapors. New ref. **spectra** of Na2SO4, K2SO4, **Na2CO3**,  
and **K2CO3** pure component films were recorded and compared with the spectra  
of the black liquor deposit. All of the black liquor emission bands were  
identified using our new ref. spectra as well as literature data and ab  
initio calcns. The ab initio calcns. predict the locations and intensities  
of IR bands for the alkali-contg. vapors of interest.

L15 ANSWER 31 OF 121 CA COPYRIGHT 2002 ACS

AN 108:115963 CA  
 TI **Identification** of magnesium and iron **carbonates** based on light-absorption **spectra**  
 AU Turanova, Lidia; Turan, Jan  
 CS Geol. Ustav, Univ. Komenskeho, Bratislava, 851 01, Czech.  
 SO Mineralia Slovaca (1987), 19(4), 375-7  
 LA Czech  
 AB Characteristic curves of optical absorption spectra of minerals are presented, esp. for the magnesite-siderite isomorphous series, over the range 200-1200 nm.

L15 ANSWER 39 OF 121 CA COPYRIGHT 2002 ACS  
 AN 101:93048 CA  
 TI High molecular weight properties of lignin in black spent liquors from reed **pulp**  
 AU Kim, Su Bok; Kim, Son Gil; Cho, Guk Tae  
 CS N. Korea  
 SO Choson Minjujuui Inmin Konghwaguk Kwahagwon Tongbo (1984), (3), 39-43  
 LA Korean  
 AB Lignins in spent liquors from reed **pulp** for rayon (sulfate cooking) and **paper** (soda cooking) were extd. with water, solvents, and 0.1 N **NaOH**, **analyzed** by **UV spectra**, and fractionated by gel permeation chromatog. The lignin from **paper pulp** had lower degree of degrdn. than that from rayon **pulp**. This may be attributed to the high viscosity of black liquor from **paper pulp** at low concn.

L15 ANSWER 57 OF 121 CA COPYRIGHT 2002 ACS  
 AN 71:17310 CA  
 TI Optical absorption of hydroxyl ions associated with divalent calcium in **sodium** chloride  
 AU Kessler, Arnost  
 CS Inst. Phys., Bratislava, Czech.  
 SO Czech. J. Phys. (1969), 19(5), 689-96  
 AB The **measurements** confirmed the assocn. of  $\text{Ca}^{2+}$  and  $\text{OH}^-$  in  $\text{NaCl}:\text{CaCl}_2 + \text{NaOH}$ , which causes an increase and a shift ( $+0.031 \mu$ ) of the  $\text{OH}^-$  absorption at  $2.8 \mu$ , the extinction of the  $\text{OH}^-$  **uv**-absorption at 184 nm., and the occurrence of new bands at 160-210 nm.

L15 ANSWER 67 OF 121 CA COPYRIGHT 2002 ACS  
 AN 65:35419 CA  
 OREF 65:6563g-h,6564a  
 TI The pulse radiolysis of deaerated aqueous **carbonate** solutions. I. Transient optical **spectrum** and mechanism. II.  $\text{pK}$  for OH radicals  
 AU Weeks, James L.; Rabani, Joseph  
 CS Chem. Div., Argonne Natl. Lab., Argonne, IL  
 SO J. Phys. Chem. (1966), 70(7), 2100-6  
 AB The pulse radiolysis of deaerated aq. carbonate solns. at neutral and alk. pH was studied. A mechanism is presented, and several rate consts. have been detd. (all are in units of  $\text{M}^{-1} \text{sec}^{-1}$ ):  $k(\text{OH} + \text{CO}_3^{2-}) = 4.2 \times 10^8$ ,  $k(\text{O}^- + \text{CO}_3^{2-}) < 10^7$ ,  $2k(\text{CO}_3^- + \text{CO}_3^-) = 1.25 \times 10^7$  (zero ionic strength), and  $k(\text{OH} + \text{HCO}_3^-) = 1.5 \times 10^7$ . In the pulse radiolysis of carbonate solns. a transient optical absorption appears which is **identified** as the **carbonate** radical ion ( $\text{CO}_3^-$ ). Its spectrum is reported and has a max. absorptivity of  $1860 \pm 160 \text{ M}^{-1} \text{cm}^{-1}$  at 6000 A. There is a pH dependency of the rate of  $\text{CO}_3$  formation, from which the  $\text{pK}$  for the ionic dissocn. of OH radicals has been detd. as  $11.8 \pm 0.2$ , where  $\text{pK}$  is defined as  $-\log \{ [\text{H}^+] [\text{O}^-] / [\text{OH}] \}$ . The results are compared with earlier work. 20 references.

L15 ANSWER 83 OF 121 CA COPYRIGHT 2002 ACS

AN 59:71915 CA

OREF 59:13334b-f

TI Spectrophotometric method and its utilization in the analysis of alloys without using special reagents

AU Kharlamov, I. P.; Yakovlev, P. Ya.; Lykova, M. I.

SO Sb. Tr. Tsentr. Nauchn.-Issled. Inst. Chernoi Met. (1963), (31), 151-7

LA Unavailable

AB The absorption of >70 solns. of inorg. acids, bases, and salts was studied at 210-1100 m $\mu$  in 10-mm. cells. Colorless solns. of acids and alkalis absorb light mostly at 210-320 m $\mu$ ; solns. of acids and bases, even at marked concns., do not absorb light at wavelengths >300 m $\mu$ . Na<sub>2</sub>S<sub>2</sub>O<sub>7</sub> and NaF absorb light only slightly in the whole wavelength interval. Solns. of nitrates, chlorates, sulfates, bromides, iodides, and also Na and K phosphates absorb light strongly in the farther **ultraviolet** region with no max. except for the nitrates. Light absorption of phosphates and of K<sub>2</sub>CO<sub>3</sub> and Na<sub>2</sub>CO<sub>3</sub> in the **ultraviolet** region is due to the partial hydrolysis of these salts with the formation of alkalis. Colorless and slightly colored solns. of sulfates absorb light strongly in the far **ultraviolet** region, with the absorption intensity of various metals decreasing in the order Fe<sup>+++</sup> > Cu<sup>++</sup> > Cr<sup>+++</sup> > ZrO<sub>2</sub><sup>++</sup> > TiO<sup>+</sup> > Co > Ni<sup>++</sup> > Mn<sup>++</sup> > Na<sup>+</sup>. Colorless and weakly colored solns. of the chlorides, except Cu and Cr chlorides, absorb light much more weakly in the whole interval of wavelengths; NH<sub>4</sub><sup>+</sup>, Sr, Nd, Ca, Ba, and Zn salts, even at 1 mg./ml., do not absorb light; the remaining metals give the following order with respect to absorption intensity: Hg<sup>++</sup> > Fe<sup>+++</sup> > Sb<sup>++</sup> > Fe<sup>++</sup> > Sn<sup>++</sup> > Cu<sup>++</sup> > Cr<sup>+++</sup> > Be<sup>++</sup> > Al<sup>+++</sup> > Ce<sup>+++</sup> > Pr<sup>+++</sup> > Ni<sup>++</sup> > Mn<sup>++</sup> > La<sup>+++</sup> > Co<sup>++</sup> > Li<sup>+</sup> > Na<sup>+</sup> > K<sup>+</sup>. KReO<sub>4</sub> and K<sub>2</sub>MoO<sub>4</sub> show a characteristic max. at 230 m $\mu$  with a molar absorptivity of 4600-4700 (calcd. on the metal); NaVO<sub>3</sub> gives a max. at 265 m $\mu$  and a molar absorptivity of 4130; K hexaniobate gives a max. at 235 m $\mu$  with a molar absorptivity of 2400. The above data were used for the detn. of Nb, Mo, Re, and V in various alloys. For the detn. of Nb, fuse the residue of niobie acid obtained by acid hydrolysis with K<sub>2</sub>CO<sub>3</sub> + Na<sub>2</sub>CO<sub>3</sub>, leach with cold H<sub>2</sub>O, dil. the colorless soln. in a volumetric flask, and measure the absorbance at 234 m $\mu$ ;  $\geq 0.2\%$  more Nb can be detd. in the presence of 20 mg. Al, 2 mg. W, and 4 mg. SiO<sub>2</sub> in 100 ml. soln.; V, Re, Mo, AsO<sub>4</sub><sup>---</sup>, and NO<sub>3</sub><sup>-</sup> interfere; the sensitivity is  $6 \times 10^{-5}$  mg. Nb/ml. and the relative error is <4%. For the detn. of Mo, remove the base metal of the alloy with alkali, neutralize with H<sub>2</sub>SO<sub>4</sub> to pH 6.5-9.5, and measure at 230 m $\mu$ ;  $\geq 0.25\%$  Mo can be detd. in the presence of 20 mg. Al, 2 mg. W, and 4 mg. Si in 100 ml. soln.; V, Re, AsO<sub>4</sub><sup>---</sup>, and NO<sub>3</sub><sup>-</sup> interfere; the sensitivity is  $4 \times 10^{-7}$  g. Mo/ml., and the relative error is <2%. For the detn. of Re, proceed as for Mo, but in this case, the temp. of evapn. to SO<sub>3</sub> fumes should be  $\leq 160^\circ$  and the removal of NO<sub>3</sub><sup>-</sup> is attained by repeated evapn. to weak fumes of SO<sub>3</sub>. For the detn. of V, dissolve the alloy in acids, oxidize Cr to Cr<sup>6+</sup>, ppt. with cupferron, ignite, fuse with **K<sub>2</sub>CO<sub>3</sub> + Na<sub>2</sub>CO<sub>3</sub>**, filter, and **measure** at 270 m $\mu$ ; W and Mo still present with V do not interfere; the amt. of Nb should be  $\leq 2$  mg. Other applications using the above data are also possible, esp. for Cu and Fe.

L15 ANSWER 110 OF 121 CA COPYRIGHT 2002 ACS

AN 53:27107 CA

OREF 53:4902b-d

TI Absorption **spectra** of gaseous alkali metal **hydroxides** at high temperatures

AU Spinar, L. H.; Margrave, J. L.

CS Univ. of Wisconsin, Madison

SO Spectrochim. Acta (1958), 12, 244-6

AB A modified Perkin-Elmer Model 81 single-beam recording infrared

spectrometer has been used for studies of gaseous hydroxides at temps. up to 1000°. Characteristic absorptions have been found for the equil. gases over **NaOH**, **KOH**, and **RbOH** at wave lengths in agreement with predictions made on the basis of a gaseous ionic model for  $[\text{MOH}]_x(\text{g})$ . Gases over **LiOH**, **NaOH**, and **KOH** were **examd.** in the visible and **ultraviolet** regions, but no absorption spectra were found.  $\text{Na}(\text{g})$ , in equil. with  $[\text{NaOH}]_x(\text{g})$ , was first **detectable** at about 850°.

L15 ANSWER 121 OF 121 CA COPYRIGHT 2002 ACS

AN 24:16417 CA

OREF 24:1796e-f

TI **Ultra-violet** absorption spectrum of hydroxyl ion

AU Ley, H.; Arends, B.

SO Z. physik. Chem., Abt. B (1930), 6, 240-6

AB The absorption **spectra** of solns. of **NaOH** in water varying from 0.063 to 0.066 N, of  $\text{Ba}(\text{OH})_2$  solns. from 0.0034 to 0.0528 N and of  $\text{Ca}(\text{OH})_2$  at 0.0398 N have been **detd.** In all cases a max. was observed at 1860 A. U.; this must be characteristic of OH ion. A brief theoretical discussion is given.

=> log y

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